

IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. If any shipping damage is found, notify carrier at once. Shipping is NOT covered by warranty. The carrier is responsible for all repair or replacement from damage in shipping.



DESCRIPTION

Enerpac Modular Air Pumps are made for applications where compressed air is a convenient power source or where safety reasons make it necessary. These 10,000 psi pumps are available with manual or no valve, and reservoir sizes of 2, 5, or 10 gallons (8, 20, or 40 liters).

 **WARNING**

Only trained personnel should operate these pumps. Untrained operators may use procedures that cause equipment damage and/or serious personal injury.

SAFETY INFORMATION

To avoid personal injury or property damage during system operation, read and follow all CAUTIONS, WARNINGS, and INSTRUCTIONS included with or attached to each product. ENERPAC CANNOT BE RESPONSIBLE FOR DAMAGE OR INJURY RESULTING FROM UNSAFE USE OF PRODUCT, LACK OF MAINTENANCE, OR INCORRECT PRODUCT AND/OR SYSTEM APPLICATION. Contact Enerpac when in doubt about applications and safety precautions.

WARNING

The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure.

WARNING

Start the pump with the valve in the neutral position to prevent accidental cylinder operation. Keep hands clear of moving parts and pressurized hoses.

WARNING

Always wear proper personal protective gear when operating hydraulic equipment (i.e. safety glasses, gloves, etc.)

WARNING

Make sure that all system components are protected from external sources of damage, such as excessive heat, flame, moving machine parts, sharp edges, and corrosive chemicals.

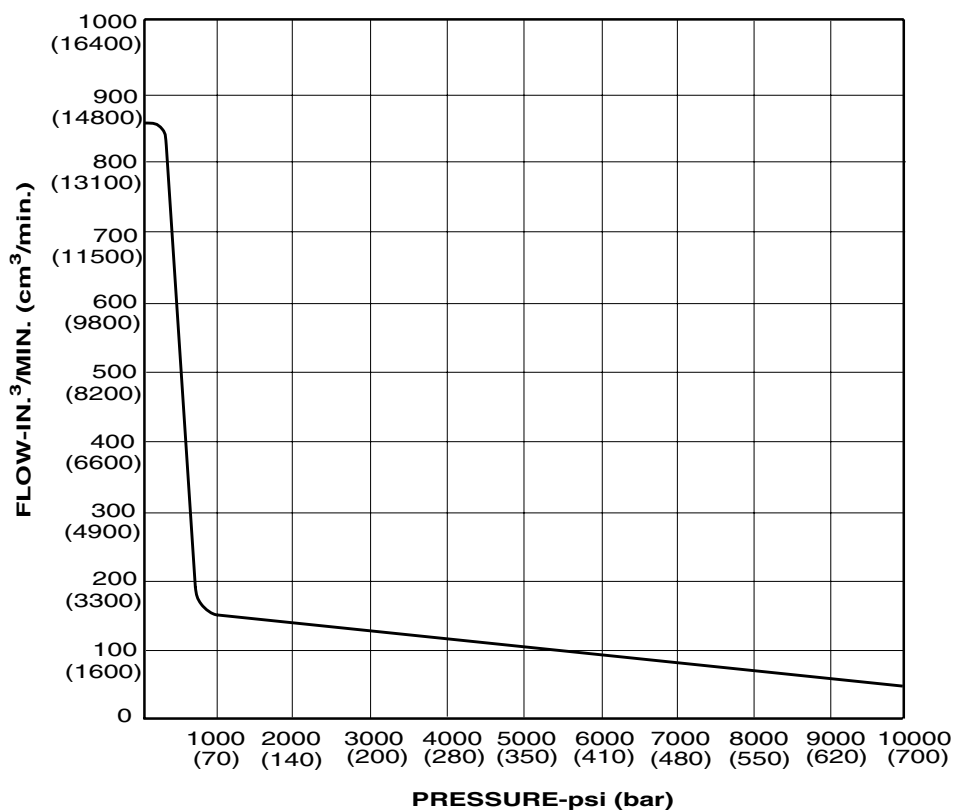
WARNING

These pumps have factory adjusted relief valves which must not be repaired or adjusted except by an Authorized Enerpac Service Center.

SPECIFICATIONS

Flow vs. Pressure	850 cu. in./min at 50 psi (13900 cu. em./min at 3 bar)	105 cu.in./min. at 1000 psi (1700 cu.cm/min. at 70 bar)	30 cu. in./min. at 10,000 psi (490 cu. cm/min at 700 bar)
Air Pressure	60 - 100 psi (4-7 bar)		
Air consumption	40 cfm at 100 psi (18880 cu.cm./sec. at 7 bar)		
Relief Valve Adjustment Range	800 - 10,000 psi (55 - 700 bar)		
Noise Level	80 - 90 dBA at 100 psi (700 bar) Air Pressure		

Flow Chart at 100 psi (6,9 bar) Air Pressure



INSTALLATION

Air Hook-Up

Pumps require 60-100 psi air pressure at 40 ft.³/min. An RFL-102 Regulator-Filter-Lubricator should be installed upstream from the pump to provide clean, lubricated air, and to allow for air pressure adjustment. Attach incoming air supply to the 3/8" NPT air port (A) on air valve. See Figure 1 below for air port location.

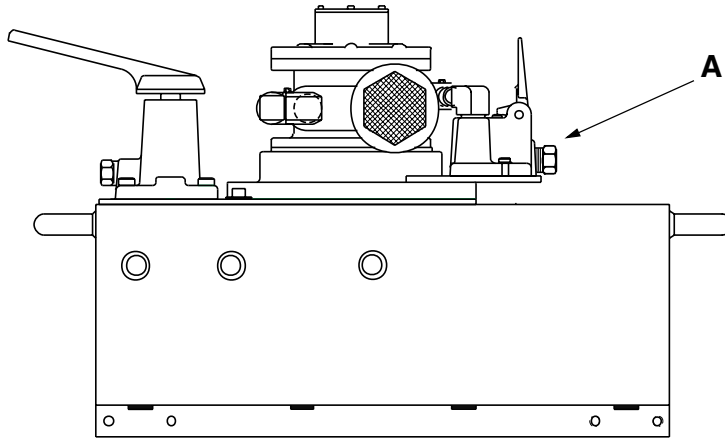


Figure 1

Attaching Hydraulic Hoses

Thread hose(s) into the outlet port(s) of the valve. See Figure 2 for valve outlet port (B) location. Use 1 1/2 wraps of Teflon tape on the hose fitting, leaving the first complete thread free of tape. See Figure 3 for correct teflon tape application. Pumps with 3-way valves have one outlet port, and pumps with 4-way valves have 2 outlet ports. All hoses and components used with this pump must have a working pressure rating higher than or equal to the maximum pressure rating of the pump.

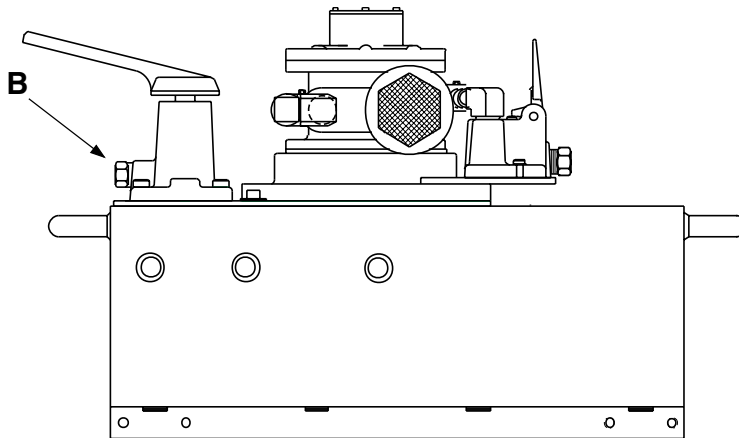


Figure 2

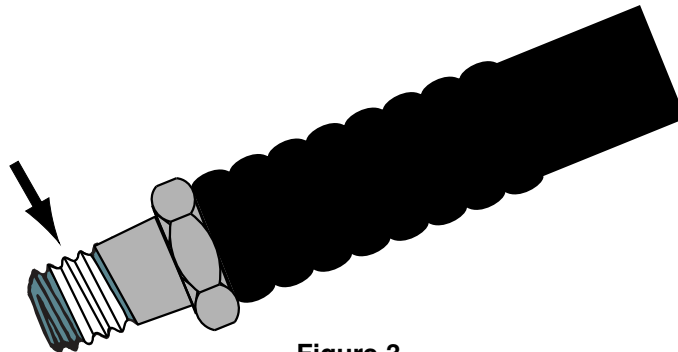


Figure 3

Oil Level Gauge

Remove the shipping plug from the fill port, and replace it with the oil level gauge (C) supplied with the pump. See Figure 4 for oil level gauge location.

CAUTION

Failure to install oil level gauge will cause cavitation and damage to the pumping mechanism.

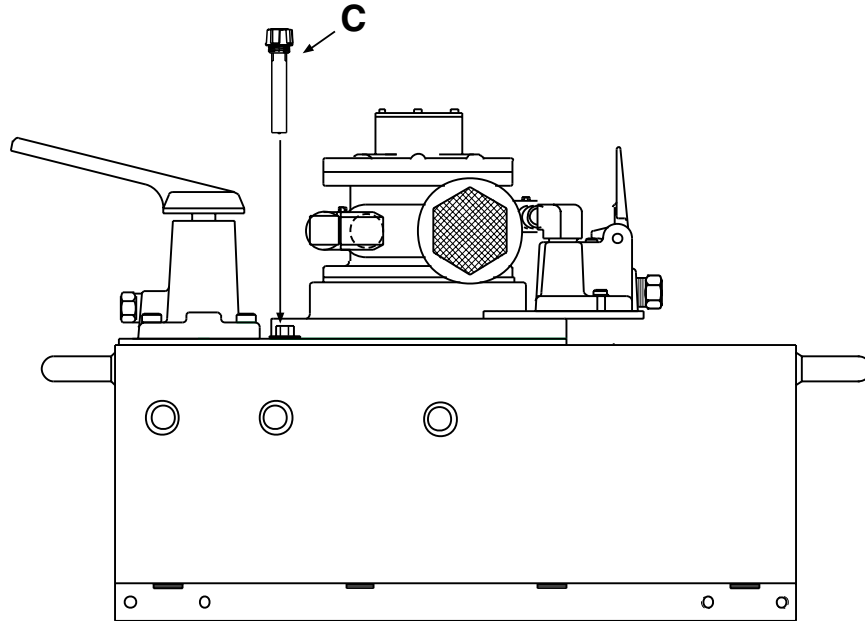


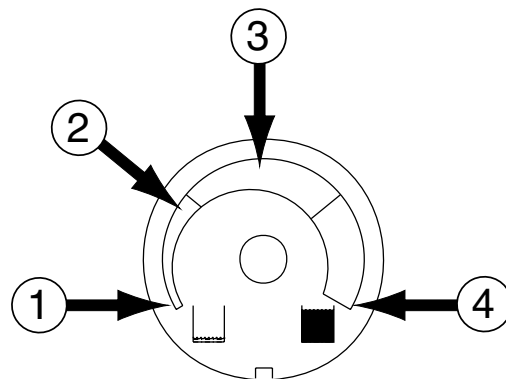
Figure 4

Oil Level

Check the oil level of the pump prior to start-up. Add Enerpac Hydraulic Oil, if necessary, by removing the oil level gauge. The reservoir is full when the oil level is 1 inch (2.5 cm) below the reservoir cover. Figure 5 defines oil level gauge readings.

CAUTION

Add oil only when all system components are fully retracted, or the system will contain more oil than the reservoir can handle, creating a potential for injury or damage to the pump.



1 - Empty 2 - Add Oil 3 - In Use 4 - Full

Figure 5

Mounting Rails

Two U-shaped rails are provided for mounting the pump to a fixed surface. See Figure 6 and the table below for exact dimensions.

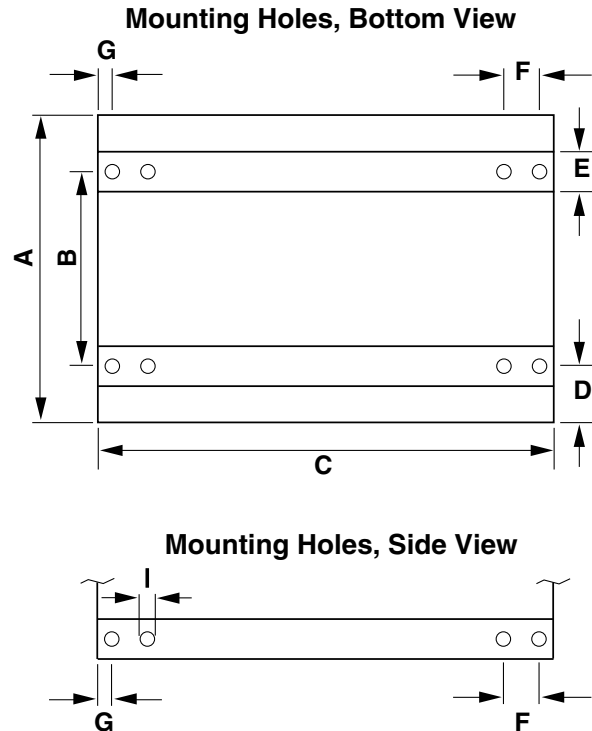


Figure 6

Mounting Rail Dimensions in. (cm)		
	2 Gallon (8 liter)	5, 10 Gallon (20, 40 liter)
A	8.07 (20,5)	13.39 (34,0)
B	6.48 (16,5)	11.64 (29,6)
C	11.97 (30,4)	18.11 (46,0)
D	0.79 (2,0)	0.89 (2,3)
E	1.04 (2,6)	1.04 (2,6)
F	1.97 (5,0)	1.97 (5,0)
G	0.39 (1,0)	0.39 (1,0)
H	0.379 (0,96)	0.379 (0,96)
I	0.285 (0,72)	0.285 (0,72)

Return-to-Tank Port

A 3/8" NPT port is included on the pump for connecting tank lines from remote valves. See Figure 7 for return-to-tank port (D) location.

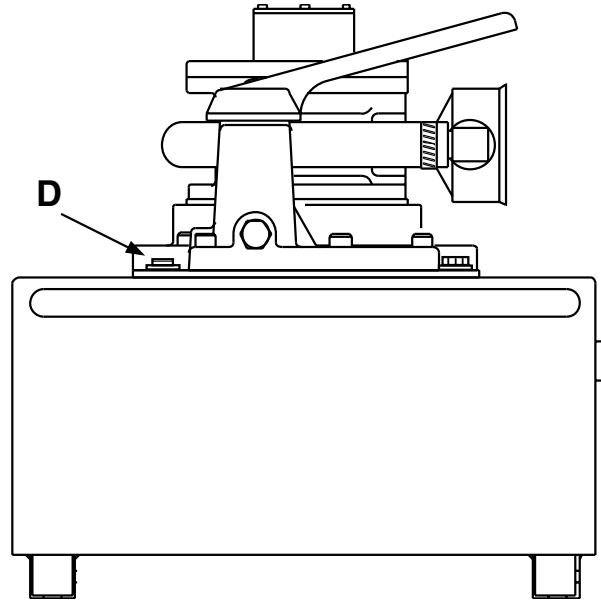
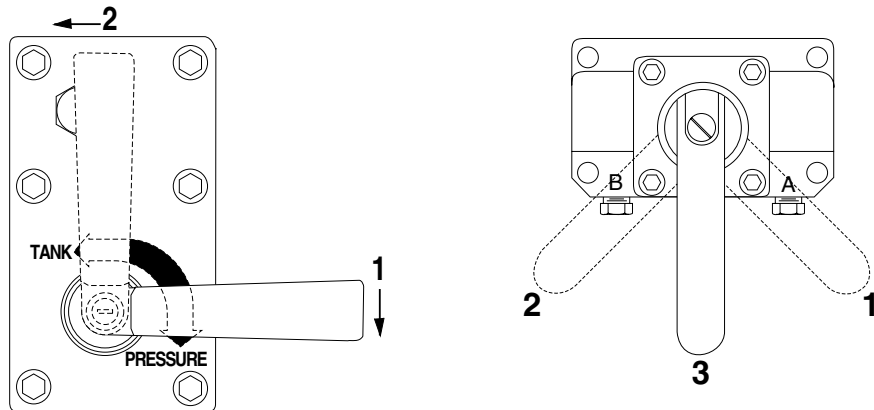


Figure 7

OPERATION

1. Check the oil level of pump and add Enerpac oil if necessary.
2. Make sure the shipping plug has been removed and the level gauge is installed.
3. Set the control valve to the neutral or retract position. See Figure 8 for control valve positions and operation.



VM-2

1. Advance
2. Retract

VM-3, VM-3L, VM-4, VM-4L

1. Advance
2. Retract
3. Neutral

Figure 8

4. To start the motor, push on the air valve pedal.
5. To stop the motor, release the air valve pedal.

Relief Valve Adjustment

The Modular Air Pump is equipped with 2 relief valves. One is a factory set safety relief, which must not be adjusted or repaired except by an Authorized Enerpac Service Center. The other relief valve can be adjusted as follows:

1. Install a gauge on the hydraulic port (using a gauge adapter and sealant such as Teflon tape).
2. Start the pump, and let it run to allow the oil to warm.
3. Remove the plug (E) from the side of the reservoir (see Figure 9).
4. Insert a 3/16" hex wrench into the adjusting screw located in the plug opening.
5. Shift the control valve to advance to build pressure in the system.
6. Turn the adjusting screw counter-clockwise to decrease pressure, and clockwise to increase pressure.

CAUTION

The adjustable relief valve should never be bottomed out. Bottoming-out the adjustable relief valve will result in premature wear of the safety relief valve. To get the most accurate setting, decrease the pressure to a point below the final setting, and then slowly increase the pressure until it reaches the desired setting.

7. Shift the valve to the neutral position, allowing the system pressure to return to 0 psi.
8. Recheck the final pressure setting by shifting the control valve and pressurizing the system.

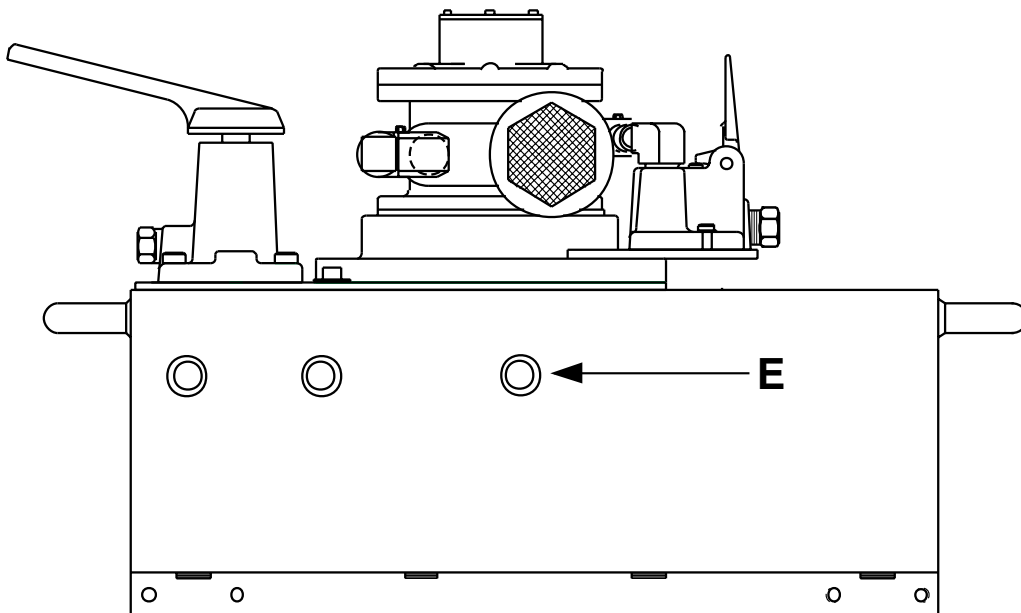


Figure 9

MAINTENANCE

Frequently inspect all system components for leaks or damage. Repair or replace damaged components.

Check Oil Level

Check the oil level of the pump prior to start-up. Add Enerpac oil, if necessary, by removing the oil level gauge. Always be sure cylinders are fully retracted before adding fluid to the reservoir.

Change Oil and Clean Reservoir

Completely drain and clean the reservoir every 250 hours, or more frequently if used in dirty environments.

NOTE: This procedure requires that you remove the pump from the reservoir.

Work on a clean bench and dispose of used oil properly.

1. Unscrew the 10 bolts holding the coverplate to the reservoir.
2. Lift the pump unit out of the reservoir. Be careful not to damage the filter screen.
3. Pour all oil out of the reservoir.
4. Thoroughly clean the reservoir with a suitable cleaning agent.
5. Unscrew the bolt holding the oil filter screen and remove the screen for cleaning.
6. Clean the screen with a solvent and a soft brush.
7. Reinstall the screen.
8. Reassemble the pump and reservoir, installing a new reservoir gasket.
9. Fill the reservoir with clean Enerpac hydraulic oil. The reservoir is full when the oil level is 1 inch (2,5 cm) below the reservoir cover.

Changing the (optional) Filter Element

A suction line filter may be ordered as an accessory to the pump. The filter element should be replaced every 250 hours, or more frequently in dirty environments. The filter manifold is equipped with a 3 psi (0,2 bar) bypass to prevent cavitation if filter plugging occurs. The filter element replacement part number is PFE-250.

TROUBLESHOOTING

Only qualified hydraulic technicians should service the pump or system components. A system failure may or may not be the result of a pump malfunction. To determine the cause of the problem, the complete system must be included in any diagnostic procedure.

The following information is intended to be used only as an aid in determining if a problem exists. For repair service, contact your local Authorized Enerpac Service Center.

Problem	Possible Cause
Pump will not start.	Air turned off or line blocked.
Motor stalls under load.	Low air pressure. Muffler plugged; contaminated air.
Pump fails to build pressure.	External leak in system. Internal leak in pump. Internal leak in valve. Internal leak in system component.
Pump builds less than full pressure.	Relief valve set too low. External system leak. Internal leak in pump. Internal leak in valve. Internal leak in system component.
Pump builds full pressure, but load does not move.	Load greater than cylinder capacity at full pressure. Flow to cylinder blocked.
Cylinder drifts back on its own.	External system leak. Internal leak in system component.
Single-acting cylinder will not return.	Valve malfunction. Cylinder return spring broken. Return flow restricted or blocked. No load on a "load return cylinder.
Double-acting cylinder will not return.	Valve malfunction. Return flow restricted or blocked.

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